NOTES ON CLEANUP STANDARDS MEETING - NOVEMBER 22, 1995

The working group developing a site-wide groundwater strategy and cleanup standards for RFETS met on Wednesday, November 22, 1995 from 8 30 am to 12 30 am at the EPA Building The session was mediated by personnel from Keystone and was attended by CDPHE, EPA, DOE, Kaiser-Hill and RMRS representatives

The following agenda was developed by Keystone and these items form the major headings of this summary

- Surface Soil,
- Groundwater,
- Surface Water, and
- Next Steps

Since various standards are currently presented separately, CDPHE proposed to develop a integrated single text document for all standards, and will also coordinate all meeting notes and hand-outs This text will be available prior to the next meeting

Surface Soil

The action level will be exceedance of the PPRG for the proposed land use as defined in the Vision Actions could be removals, capping or management and will be decided on a case-by-case basis The Vision defines the acceptable leave-behind contamination However, CDPHE suggested that one option would be to change land use for an area if PPRGs are exceeded if this is convenient and appropriate There is flexibility to change the land use designation to avoid costly, unnecessary work or to avoid destruction of ecology

Subsurface Soils Removal Action Levels for VOCs

The attached hand-out of the proposed subsurface soil action levels for VOCs was presented by Susan Evans These action levels will be protective of groundwater at 100 times the MCLs for volatile organic compounds Semi-volatiles, metals and rads typically have limited mobility in soils Therefore, determination of action levels for these constituents is not necessary to protect groundwater and surface water EPA agreed with the handout and did not comment CDPHE had problems with the language not the concepts Several changes to the handout were proposed as shown on the attachment and described below

- Action levels protective of groundwater at 100 X MCL will be basis for triggering a source removal, not an evaluation
- Protection of surface water is basis of everything EPA (Joe Schieffelin) will edit #1 (protect groundwater to protect surface water
- Strike the last paragraph CDPHE will incorporate paragraphs 1 and 3 and write a new paragraph

Groundwater

The attached handout proposes a two tier approach to groundwater where low levels near surface water are treated differently than higher concentrations near the source Comments on the handout are presented below, as well as noted on the handout

The proposed groundwater standards are the same as the surface water standards for warm water 2, aquatic 2 as stated along with agricultural and recreational use

Tier 1 - high concentrations
CDPHE would like a bias for action, not evaluation when these levels are exceeded Group agreed that exceedance of these levels would trigger a management action

for the 2nd bullet	change threat to risk
for the 2nd sub-bullet	CDPHE only do a trend analysis if source removed or a barrier installed
	K-H said any decreasing trend whether due to unrelated actions or time will result in no action

Tier 2 - Distal ends of plumes
4th bullet change to If no increase in contamination is observed over two years, these low level plumes will be left to naturally attenuate

Group Consensus
Groundwater will be managed to protect surface water
For Tier 1, the bias is for action and exceedances will result in a management action
For Tier 2, we have more options open to us such as
- evaluation instead of action
- waiving standards
- establishing ACLs

Detection/Monitoring wells
Certain wells are proposed as part of the current monitoring network (see attached) but should be called Detection/Monitoring wells Exceedances during routine sampling at these wells, whether sampled on a quarterly or semi-annual basis, will trigger monthly sampling of contaminants of concern only These wells are placed where it would be possible to determine if surficial water is being affected by groundwater

Point-of-Compliance
CDPHE stated that the Attorney General and Water Quality Division require that a Point of compliance (POC) be established The following is envisioned by CDPHE
- POC wells will ensure that the site model is correct
- POC wells will be next to surface water
- POC wells are currently clean
- A POC for groundwater cannot be measured in surface water
- exceedance of standards at POC will trigger
  - action at well
  - action upgradient of well (near source)
  - waiving of standards by petitioning for ACLs
- exceedance is defined as samples exceeding standards for 3 months
- NOVs would not necessarily be required for exceedances

A rough draft of one page of the CDPHE single text was handed out as an example (attached) Comments are written on this sheet It was suggested to change the text under "Managing groundwater to protect surface water" - taking word remedial out and substituting the word management CDPHE agreed

CDPHE stated that we need to establish points of compliance If standards are exceeded concerning groundwater, then, examine monitoring system to track contamination Any compliance well will be clean when established If they become contaminated in future, something must be done

RMRS pointed out that the currently proposed wells are not clean based on the proposed groundwater standards The proposed wells are clean based on plumes drawn using 5 mg per liter limit

CDPHE reiterated that the intention is to measure compliance at points where we will always be clean and to define the requirements under the law if these clean wells become contaminated

DOE stated that the Point of compliance should be at Indiana (boundary of site) And since the goal is to protect surface water, why isn't the POC measured in surface water instead of groundwater?

EPA stated that there is no difference between the detection/monitoring wells proposed by DOE and the compliance well per CDPHE CDPHE stated that if fines and penalties won't be triggered by an exceedance, then we're done right here CDPHE does have the authority to change standards or set alternative concentration levels

Kaiser-Hill pointed out that a Point of compliance means an out of compliance situation if limits are exceeded To the common man, out-of-compliance means something is wrong, and generates negative publicity and NOVs Also, if surface water is not out-of-compliance, and groundwater is managed to protect surface water, how can groundwater be out-of-compliance? How can the site be out-of-compliance when it is meeting goals of the Vision?

Group Consensus
We are disagreeing on nomenclature but not substance Perhaps this group has gone as far as possible and this matter should be elevated On Monday CDPHE will provide the Tier 1, Tier 2 write-up of the single text and include their technical opinion of what an exceedance means The rest of the group will do homework about regulations/requirements Keystone pointed out that no matter how the issue is resolved, the group did very well to identify this as an issue

The Task Leaders will convene a joint meeting with technical and legal people to see if there can be a resolution If not, then this issue must be handed off

Surface Water
CDPHE is willing to go to a health based standard of 0 15 pCi/l for plutonium (Pu) which is the domestic consumption PPRG for Pu They believe that surface water should be included in area III of the Vision which makes the streams and ponds appropriate for all uses

K-H pointed out that Area 3 was intended to be the area not impacted by plant activities, and the streams and ponds have been impacted At some point we should be able to say the water is OK Where? At earlier meetings, this was at Indiana Also, is drinking water the correct usage?

EPA stated that the Vision says all uses, and they do not want to revisit what has already been decided upon CDPHE feels that water standards should reflect all uses

K-H The issue this group has to come up with (because the Vision is inconsistent) pick a number that is reasonable from a risk prospective and protective of land uses for Area I, II, and III

CDPHE stated that the standard right now is 05 pCi/l at Indiana What is achievable?

RMRS - 0 15 pCi/l will require a lot more management closer to Indiana to achieve
DOE - What is the logic behind 15? (Discussion) It's based on consumption at the 10^{-6} risk level

CDPHE believes that since 05 is the current standard, 15 will be a hard sell to the public or water quality commission Why should they allow water degradation?

The group told DOE that the open space PPRG of 131 pCi/l could not be sold to the public and that they needed to come up with an acceptable number, either 15 or 6 pCi/l proposed by EPA

CDPHE would like a feeling for the impacts of a standard of 15 pCi/l would be

RMRS - Current ambient conditions range from 15 to 3 influent into the ponds now Watershed management and pond management changes would be required to ensure that 15 would be met

However, there are three drivers for the surface water standard
1) Political - public will not accept the 141 pCi/l open space PPRG which is reasonable
2) Existing conditions
3) Common Sense

The Site loses control of the water at Indiana Street Does it make more sense to manage at the terminal ponds or Indiana St ? Prefers to keep it at Indiana to allow for a slightly greater margin of comfort, but the location could move inward as the Site use changes The proposed 0 15 pCi/l standard requires management with attendant cost and may not make sense based on experience at C-2 DOE agreed that with the heavy rains last spring, puts the 0 15 pCi/l standard in jeopardy The 0 6 pCi/l standard would be a better goal for water managerment

EPA proposed two standards -1 for intermediate efforts and 1 for final CDPHE agreed to consider a higher number for the interim period during active D&D and remediation

CDPHE feels that surface water is most important because we've hung everything on it and wondered if DOE making surface water decisions on fact or data or what they want to do? If ambient can be defined, then interim relief could be provided If we cannot evaluate data or if data does not exist then we cannot come up with answer

DOE assured the group that data do exist and have been analyzed and that State and EPA have access to these data The group agrees that the next technical step is to determine the right risk based standard

DOE - whatever that number is, resetting the Pu standard for RFETS has nothing to do with some people in this group We will be willing to go to the commission with this number with you and whatever number our toxicologist and yours agree on

A discussion ensued on whether ingestion is appropriate and whether a 10^{-6} risk level was appropriate 10^{-6} is the State-wide standard for dealing with carcinogens, and no known residential use will allow a standard of 0 6 pCi/l CDPHE strongly feels that no downstream cities believe you should be able to release more Pu than in the past DOE proposed a 30 day average as the ambient base standard and feels that it would be over 0 15 pCi/l Is the State willing to look at ambient base standards on a special case?

CDPHE asked where, why, and how much relief is needed?

NEXT STEPS
Joe Schieffelin will identify areas for legal policies CDPHE will produce a document that will integrate all these standards as an integrated proposal subject to further discussion

DOE and Kaiser-Hill will come up with a counter proposal for surface water and will provide the risk-based argument which can include ambient and interim values

DOE - John Rampe took action to revise the Tier I groundwater language

J Schieffelin - we will try to have a revised single text on Monday as soon as we can get it out

NEXT MEETING
Thursday, November 30, 1995, 8 30 - 12 30

Subsurface Soil Removal Action Levels for VOCs

The Groundwater Strategy Working Group agreed to the following action levels for subsurface soil removal action levels for VOCs

1) The action levels for subsurface soil cleanup will be protective of groundwater at 100x MCLs These values are shown in Table 1 The model from EPA's Draft Soil Screening guidance was used to arrive at these concentrations Site-specific geohydrologic factors were incorporated into the model

2) The need for excavation below the water table for source removal actions will be determined on a case-by-case basis

3) Sources that impact groundwater will be prioritized as part of IHSS prioritization

4) A single data point of subsurface soil contamination above the values in Table 1 will not necessarily trigger a source removal. All available data will be evaluated on a case by case basis to determine the potential threat to groundwater and surface water

The action levels above apply only to soil source removals for VOCs, as used to control the size of the removal excavation In addition, actions to the source removal will be considered if they are needed to protect groundwater and surface water

Volatile organics are the most mobile contaminants Semi-volatile organics, metals, and radionuclides (Pu, Am, U) typically have limited mobility in soils Therefore, determination of action levels below PPRGs was not necessary to protect groundwater

EXAMPLE SOIL CLEAN-UP LEVELS PROTECTIVE OF GROUNDWATER TO MCLs AT 100 TIMES THE MCL

Chemical	Henry's Constant	Kd	Drinking Water MCL X 100 (ppm)	Dilution Factor	Soil Clean-up Level (ppm)
1,1 DICHLOROETHENE	1 04E+00	1 89	7 00E-01	7 8	**1 19E+01**
1,1,1 TRICHLOROETHANE	7 63E-01	2 17	2 00E+01	7 8	**3 78E+02**
1,2 DICHLOROETHANE	5 25E-02	1 45	5 00E-01	7 8	**6 33E+00**
1,2 DICHLOROETHENE	2 29E-01	1 55	7 00E-01	7 8	**9 51E+00**
ACETONE	1 18E-03	0 80	-	7 8	-
CARBON TETRACHLORIDE	1 18E+00	2 53	5 00E-01	7 8	**1 10E+01**
CHLORFORM	1 65E-01	1 76	1 00E+01	7 8	**1 52E+02**
ETHYLBENZENE	3 18E-01	3 01	7 00E+01	7 8	**1 76E+03**
METHYLENE CHLORIDE	9 70E-02	1 30	-	7 8	-
TETRACHLOROETHENE	7 09E-01	2 70	5 00E-01	7 8	**1 15E+01**
TOLUENE	2 52E-01	2 42	1 00E+02	7 8	**2 04E+03**
TRICHLOROETHENE	4 35E-01	2 16	5 00E-01	7 8	**9 27E+00**
XYLENE (TOTAL)	2 48E-01	3 08	1 00E+03	7 8	**2 56E+04**

REVISED DRAFT November 16, 1995

K-H, RMRS, DOE RFFO, EPA and CDPHE DRAFT GROUNDWATER PROPOSAL

The following proposal was derived from discussions at the groundwater strategy working group meeting on November 15, 1995 The focus of this proposal is on protection of surface water

Groundwater standards will be the same as the surface water standards Surface water standards currently proposed are

- warm water 2-aquatic 2 for non-rad constituents with minor modifications, and
- rad standards are to be determined

There will be a two tiered approach to the application of standards and triggering of actions dependent on contaminant concentrations, and locations within a plume The two tiers are as follows

Tier 1 - Plume sources where high concentrations occur in groundwater or the vadose zone, and

Tier 2 - Downgradient of plumes or at the distal ends of plumes

Tier 1 High concentrations

- Trigger level - Groundwater concentrations exceeding a value such as 100 times the MCL
- Trigger action - Identify and evaluate effective, cost-efficient and feasible groundwater remedial actions if
  - a pathway evaluation indicates a threat to surface water, and
  - there is no decreasing trend in groundwater over two years
- All actions will be taken in accordance with the Environmental Priority List

Tier 2 Distal ends of plumes, or downgradient of plumes in clean areas

- A detection/monitoring network will be established to monitor surface water protection by identifying if significant changes to the groundwater flow system are occurring (i e changes in gradients, water levels and/or contaminant concentrations)
- Trigger level - If contaminants consistently exceed surface water standards at detection/monitoring wells in clean areas, or if concentrations significantly increase in the detection/monitoring wells within the distal ends of plumes
- Trigger action - additional evaluation will be performed to determine if an action is required
- If no increase in contamination is observed, and if the groundwater source is removed, these plumes will be left to naturally attenuate

Plumes which do not exceed Tier 1 trigger levels may be considered as candidates for remediation if these pose a significant risk to surface water

Assumptions

- VOCs are the primary concern in groundwater
- Passive treatment of dissolved phase contamination will be preferred

Groundwater Strategy Breakout Group
Tier II (Detection Monitoring) Wells for Volatile Organic Compounds
Recommendations as of November 20, 1995

OU2

6586
New well up stream of 6586
New well between B-2 and B-3 (exact location yet to be determined)
75992
06091
New well near C-1 (down gradient of Ryan's Pit)
10194

Industrial Area

1986
10994

Old Landfill

7086

IHSS 119 1 (OU1)

10992

Solar Ponds

1786
1386

IHSS 145

10692

Present Landfill

4087
B206989

PU&D Yard (IHSS 170, 174a & 174b)

No wells were selected pending an evaluation of nature and extent of contamination Results of VOC analyses from groundwater samples collected from piezometers 61495, 61595 and 61695 are anticipated to be available about the last week in January

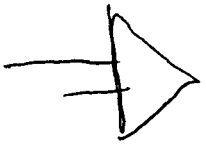
CDPHE 11/22

V Action Levels

A two-tiered action level approach within the detection and monitoring network is designed to prevent violations of the surface water standards at points of compliance This approach is dependent on contaminant concentrations and location within a plume

Tier 1 Near-Source Action Levels

- Applies near plume sources where high concentrations occur in groundwater or the vadose zone
- Action levels = groundwater concentrations which exceed 100 x groundwater standard
- If Tier 1 action levels are exceeded, then a process to identify and evaluate efficient, cost-effective and feasible groundwater remedial action is triggered. if
  - a pathway evaluation indicates a threat to surface water, or
  - there is no decreasing trend in groundwater within two years of a related soil source removal
- Plumes which do not exceed near-source action levels are considered candidates for remediation if these pose a risk to surface water quality
- All actions will be taken in accordance with the Environmental Priority List



Tier 2 Distal Action Levels

- Applies at distal ends of plumes or downgradient of plumes in valley-fill alluvium
- Designed to ~~protect surface water~~ prevent exceedences at points of compliance by triggering actions when necessary
- The site-wide groundwater monitoring network will identify significant changes to the groundwater flow system (i e , changes in gradient, water levels, and/or contaminant concentrations) as part of quarterly reporting
- If concentrations in a well at the distal edge of a plume increase significantly or if contaminants exceed surface water protection standards in the valley-fill alluvium during a regular sampling event, monthly sampling will be required Three consecutive monthly samples showing contaminant concentrations greater than groundwater standards at the distal edge of a plume or three monthly samples exceeding the standards in the stream alluvium will trigger action Will not force into quarterly monitoring change
- Required actions will initially consist of additional evaluation to determine if remedial action is necessary to prevent exceedences at points of compliance If remedial action is necessary, the type and location of the action will be further evaluated

Suite = ADDITIONAL sampling of only contaminants shown to increase

Joe - missing statement once decided to do something, what is appropriate
Includes remedial actions

Tim Rehder - before anything engineered, SW will be checked to see if impacted